

ABSTRACT

Methods are proved for introducing a biologically active agent into cells of a subject by introducing the agent in a form suitable for electrotransport into a region of tissue of the subject using one or more needle-free injectors, and applying a pulsed electric field to the region of tissue, thereby causing electroporation of the region of tissue. The combination of needle-free injection and electroporation is sufficient to introduce the agent into cells in skin, muscle or mucosa. For example, the region of tissue can be contacted with two oppositely charged injectors, one acting as the donor electrode and one acting as the counter electrode, or a single injector and one or more electrodes can be used. In addition, needle-free injection may be used in combination with suitable non-invasive electrode configurations. The active agents delivered into cells using the invention method can be small molecules, polynucleotides, polypeptides, and the like.